AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (currently amended) A method for transmitting a continuous digital signal of an arbitrary rate R1 over a synchronous network, comprising:

selecting a fixed length container signal of a rate R, where R is higher than said arbitrary rate R1 of said continuous signal; and

at a transmit site, adaptively distributing the bits of said continuous signal into valid locations of a frame of said container signal and providing stuff bits into invalid locations,

wherein said invalid locations are uniformly interspersed across said frame.

2. (original) A method as claimed in claim 1, wherein said container signal is a SONET/SDH signal, and said synchronous network is a SONET/SDH network.

3. (previously amended) A method as claimed in claim 2, wherein said continuous digital signal is also a SONET/SDH signal.

4. (original) A method as claimed in claim 2, wherein said SONET/SDH signal comprises a plurality of transparent tributaries.

5. (previously amended) A method as claimed in claim 1, wherein said stuff bits comprises fixed stuff and adaptive stuff bits.

6. (currently amended) A method as claimed in claim 5, wherein said step of adaptively distributing comprises:

determining the phase difference between said continuous digital signal and said container signal;

adaptively adding to the bits of said continuous digital signal including a definite number of locations for accommodating said fixed stuff bits within said frame, and an adjustable number of locations for accommodating said adaptive stuff bits within said frame, based on said phase difference.

7. (previously amended) A method as claimed in claim 6, wherein said adjustable number is significantly larger than said definite number.

8. (previously amended) A method as claimed in claim 6, wherein said definite number includes transport overhead (TOH) locations and remainder fixed stuff bits locations.

Cont B'

9. (previously amended) A method as claimed in claim 8, further comprising providing maintenance, operation, administration and provisioning information in said TOH locations.

10. (currently amended) A method as claimed in claim 6, wherein said step of adaptively adding comprises:

partitioning said frame into a number of equally sized data blocks and said definite number of locations;

for each block,

determining a control function β indicative of said adjustable number; and

~~adding~~ mapping said adaptive stuff bits based on said control function.

11. (previously amended) A method as claimed in claim 10, wherein said step of mapping comprises:

providing a counter C for identifying a location in said block;

defining the binary bit reversal α of said control function β;

calculating the bitwise transition delta of said counter C; and

determining if a location identified by said counter C is an invalid location, whenever a function Valid (C,β) is false; and

providing an adaptive stuff bit into said invalid location.

12. (previously amended) A method as claimed in claim 1, further comprising recovering said continuous signal from said synchronous signal at a receive site, by extracting the data bits of said continuous signal from said valid locations of said frame.

Cont B'

13. (currently amended) A synchronizer for adaptively mapping a continuous format signal of an arbitrary rate for transport over a synchronous network ~~as a transparent tributary signal~~, comprising:

a data recovery unit for recovering from said continuous format signal, a stream of data bits and a data clock indicative of said arbitrary rate;

a receiver buffer unit for receiving said stream of data bits, determining a phase difference between said arbitrary rate and the rate of a frame of said tributary, and generating a control function β;

a mapping unit for extracting said stream of data bits from said receiver buffer unit at a mapping clock rate, and adaptively inserting stuff bits and said data bits into said frame at a block clock rate according to said control function β.

14. (previously amended) A synchronizer as claimed in claim 13, wherein said receiver buffer unit comprises:

an elastic store for temporarily storing an amount of data bits of said stream at said data rate clock and providing said data bits to said mapping unit at said block clock rate;

a digital PLL for determining the phase difference between said arbitrary rate and said mapping clock and providing said control function β.

15. (original) A synchronizer as claimed in claim 13, wherein said data recovery unit comprises a frequency agile PLL for detecting said arbitrary rate, and a receiver for detecting said data bits using said data clock.

16. (previously amended) A synchronizer as claimed in claim 13, wherein said mapping unit comprises:

a block clock gapper for receiving a clock indicative of the rate of said synchronous frame and providing said block clock of a block rate accounting for all locations of said synchronous frame and with gaps accounting for a definite number of locations for accommodating fixed stuff bits;

Cont B'

a mapping clock gapper for receiving said block clock and said control signal β and providing a mapping clock of a mapping rate accounting for all locations of said synchronous frame and with gaps accounting for an adjustable number of locations for accommodating adaptive stuff bits within said frame; and

a mapper for receiving said block clock and said mapping clock and accordingly mapping said stream of data bits in said frame.

17. (currently amended) A synchronizer as claimed in claim 13, further comprising a receiver OH FIFO for ~~re~~-arranging a plurality of transport overhead TOH locations for seamless transport of said frame within said synchronous network.

18. (previously amended) A synchronizer as claimed in claim 17, further comprising an overhead multiplexer for adding operation, administration, maintenance and provisioning data into said TOH locations.

19. (currently amended) A de-synchronizer for adaptively reverse mapping a continuous format signal of an arbitrary rate received over a synchronous network as a transparent tributary signal, comprising:

a reverse mapping unit for receiving a frame of said tributary at a block clock rate and a control function β, and extracting a stream of data bits at a mapping clock rate, while excluding stuff bits according to said control function β;

a transmitter buffer unit for receiving said data bits, and determining a phase difference between said arbitrary rate and the rate of said frame; and

a data transmit unit for receiving said data bits and transmitting said continuous format signal at a data rate controlled by said phase difference.

Cont'd

20. (original) A de-synchronizer as claimed in claim 19, wherein said control function β is received in said frame.

21. (currently amended) A method for transmitting a continuous digital signal of a rate R1 over a synchronous network comprising:

selecting a container of a rate R, where R is higher than said rate R1 of said continuous signal; and

adaptively mapping said continuous digital signal into said container signal by assigning from a set of assignable locations in said container signal, locations to include adaptive stuff bits, where said set of assignable locations comprises a significant fraction of the locations within said container signal.

22. (original) A method as claimed in claim 21, where the location and the number of stuff bits assigned depends on the phase of said continuous digital signal.

23. (currently amended) A method as claimed in claim 22, wherein said step of adaptively mapping comprises:

assigning a definite number of locations as fixed stuff bits within a frame of said container signal, and an adjustable number of locations as said locations to include adaptive stuff bits within said frame.

24. (original) A method as claimed in claim 23, wherein said step of adding comprises:

partitioning said frame into a number of equally sized data blocks of said definite number of locations;

for each data block,

determining a control function β indicative of said adjustable number; and

mapping data bits and said adaptive stuff bits within the block based on said control function.

Cont 1

25. (original) A method as claimed in claim 24, wherein said step of mapping comprises:

providing a counter C for identifying a location in said block;

defining the binary reversal α of said control function β;

calculating the bitwise transition delta of said counter C; and

determining if a location identified by said counter C is an invalid location, whenever a function Valid(C, β) is false; and

providing an adaptive stuff bit into said invalid location.

26. (original) A method as claimed in claim 23, further comprising recovering said continuous signal from said synchronous signal at a receive site, by extracting the data bits of said continuous signal from said frame.

27. (original) A method as claimed in claim 24, wherein said phase is communicated to a far end receiver and wherein said far end receiver uses said phase

to recover said continuous signal from said synchronous signal by extracting the data bits of said continuous signal from said frame.

Cont B'

28. (original) A method as claimed in claim 21, wherein said continuous signal is a SONET/SDH signal, said container signal is a SONET/SDH signal, and said synchronous network is a SONET/SDH network.